CLAIMS

We Claim:

- 1. A porous substrate comprising: a support; and a porous region on a surface of said support, the porous region being of primarily inorganic material and having a surface upon which a number of probe molecules can be immobilized, the porous region having a tint and exhibits a reduced level of auto-fluorescence of at least about 15% relative to a comparable non-tinted porous substrate surface.
- 2. The porous substrate according to claim 1, wherein said porous region having a tint that reduces relative auto-fluorescence levels by at least about 20-25% over said non-tinted porous substrate surface.
- 3. The porous substrate according to claim 2, wherein said porous region having a tint that reduces relative auto-fluorescence levels by at least about 50% over said non-tinted porous substrate surface.
- 4. The porous substrate according to claim 1, wherein said porous region exhibits a reduced relative auto-fluorescence level in RFU of at least an order of magnitude over said non-tinted porous substrate surface.
- 5. The porous substrate according to claim 1, wherein said reduction in auto-fluorescence is over a wavelength range from about 400 nm to about 720 nm.
- 6. The porous substrate according to claim 5, wherein said reduction in auto-fluorescence is over a wavelength range from about 420 nm to about 700 nm.
- 7. The porous substrate according to claim 1, wherein said tinted porous region has a colorant component including a transition metal ion.
- 8. The porous substrate according to claim 1, wherein said tinted porous region has a colorant component incorporated in a composition in weight percent consisting essentially of:

Oxide	wt. %
SiO ₂	53-67
Al_2O_3	3-10
B_2O_3	12-24
K ₂ O	0-5
MgO	0-2
CaO	0.5-3
SrO	0-3
BaO	2-7
Sb ₂ O ₃	0-2

and at least one of the following either individually or in combination

Co ₃ O ₄	0.1-9
NiO	0.1-10
R_xO_y	0-10

wherein R is a transition metal, and x and y are each ≥ 0 .

- 9. The porous substrate according to claim 8, wherein said R is selected from the group consisting of Fe, V, and Cu.
- 10. The porous substrate according to claim 1, wherein said porous region has a composition consisting essentially of:

Oxide	wt. %
SiO ₂	55-65
Al_2O_3	4-9
B_2O_3	14-21
K_2O	1-5
MgO	0.1-2
CaO	1-2.5
SrO	0.5-1.75
BaO	3-5
Sb_2O_3	0-2

and at least one of the following, either individually or in combination,

Co ₃ O ₄	0.1-8
NiO	0.1-10
R_xO_y	0-10

wherein R is a transition metal selected from the group consisting of Fe, V, and Cu, and x and y are each ≥ 0 .

- 11. The porous substrate according to claim 8, wherein said glass composition is chemically and mechanically durable, and has a coefficient of thermal expansion (CTE) of between about $35-44 \times 10^{-7}$ /°C.
- 12. The porous substrate according to claim 11, wherein said glass composition has a CTE of about $38-40 \times 10^{-7}$ /°C.
- 13. The porous substrate according to claim 1, wherein before a GAPS-coating process, said tinted region has an average auto-fluorescence background for Cy3 and Cy5 channels of up to about 50% RFU of said un-tinted porous substrate.
- 14. The porous substrate according to claim 1, wherein a number of biological or chemical probes are attached at defined locations on or within said tinted porous layer.
- 15. The porous substrate according to claim 13, wherein said defined locations of probes assume a microarray format of at least one microspot per cm².
- 16. The porous substrate according to claim 13, wherein said defined locations of probes assume a microarray format of at least 10 microspots per cm².
- 17. The porous substrate according to claim 1, wherein said probe molecules include at least one kind of species selected from the following: oligonucleotides, nucleotides, nucleosides, DNA, RNA, peptide nucleic acid (PNA), peptides, polypeptides, protein domains, proteins, fusion proteins, antibodies, protein-membranes, G-coupled protein receptors, gangliosides, lipids, lipid membranes, cells or cell membranes, cell-lysate, or protein-small molecule ligands.
- 18. A tool for performing biological or chemical assays, the tool comprises a non-porous support; and a porous region on a surface of said support, the porous region being of primarily inorganic material and having a surface upon which a number of probe molecules may be immobilized, the porous region having a tint and exhibits a reduced level of autofluorescence of at least about 15% relative to a comparable non-tinted porous substrate surface.

- 19. The tool according to claim 18, wherein said porous region having a tint that reduces relative auto-fluorescence levels by at least about 20-25% over said non-tinted porous substrate surface.
- 20. The tool according to claim 18, wherein said tinted porous region has a colorant component including a transition metal ion.
- 21. The tool according to claim 18, wherein said tinted porous region has a colorant component incorporated in a composition in weight percent consisting essentially of:

Oxide	wt. %
SiO ₂	53-67
Al_2O_3	3-10
B_2O_3	12-24
K ₂ O	0-5
MgO	0-2
CaO	0.5-3
SrO	0-3
BaO	2-7
Sb_2O_3	0-2

and at least one of the following either individually or in combination

Co ₃ O ₄	0.1-9
NiO	0.1-10
R_xO_y	0-10

wherein R is a transition metal, and x and y are each ≥ 0 .

- 22. The tool according to claim 21, wherein said R is selected from the group consisting of Fe, V, and Cu.
- 23. The tool according to claim 18, wherein said probe molecules are biological or chemical molecules, including at least one kind of the following: oligonucleotides, nucleotides, nucleotides, DNA, RNA, peptide nucleic acid (PNA), peptides, polypeptides, protein domains, proteins, fusion proteins, antibodies, gangliosides, membrane proteins, lipids, lipid membranes, cellular membranes, cell lysates, oligosaccharides, or polysaccharides, or lectins.